AMENDMENTS TO THE CLAIMS

Please add Claims 30-31.

1. (Original) A dual damascene structure in an integrated circuit, comprising;

a trench formed in an insulating layer;

at least one contact via extending from a floor of the trench downwardly to a conductive element below; and

a conductive lining layer along surfaces of the trench and the contact via, the lining layer having a maximum thickness of less than about 100 Å and a step coverage of greater than about 90%.

2. (Original) The structure of Claim 1, further comprising a metal integrally filling the lined trench and contact via.

3. (Original) The structure of Claim 1, wherein the conductive lining layer comprises a metal nitride layer.

4. (Original) The structure of Claim 3, wherein the metal nitride layer directly contacts the insulating layer and the conductive element.

5. (Original) The structure of Claim 4, wherein the conductive element comprises a copper line.

6. (Original) The structure of Claim 3, wherein the metal nitride layer comprises titanium nitride.

7. (Original) The structure of Claim 3, wherein the metal nitride layer comprises tungsten nitride.

8. (Original) The structure of Claim 3, wherein the metal nitride layer comprises tantalum nitride.

9. (Original) The structure of Claim 1, wherein the lining layer has a thickness of between about 20 Å and 100 Å.

10. (Original) The structure of Claim 1, wherein the lining layer has a step coverage of greater than about 93%.

11. (Original) The structure of Claim 10, wherein the lining layer has a step coverage of greater than about 97%.

12. (Original) The structure of Claim 1, wherein the trench has a width of less than about 0.35 μm.

13. (Original) The structure of Claim 12 wherein the trench has a width of less than about 0.25 μm.

14. (Original) The structure of Claim 1, wherein the contact via has a width of less than about 0.35 μm.

15. (Original) The structure of Claim 1 wherein the contact via has a width between about 0.05 μm and 0.25 μm.

16. (Original) A metal structure in an integrated circuit, the structure comprising:

a metal runner in an upper insulating layer;

a metal contact extending integrally from the metal runner through a lower insulating layer; and

a metal nitride layer interposed between the upper insulating layer and the metal runner and interposed between the lower insulating layer and the metal contact, the metal nitride layer having a maximum thickness of no more than about 200 Å on any surface.

17. (Original) The metal structure of Claim 16, wherein the metal nitride layer has a thickness between about 20 Å and 100 Å.

18. (Original) The metal structure of Claim 16, wherein the metal nitride layer has a thickness on a bottom surface and sidewall of the metal contact that is at least about 93% of a maximum thickness of the metal nitride layer.

19. (Previously Presented) The metal structure of Claim 16, wherein the metal runner and the metal contact comprise the same metal.

20 (Previously Presented) The metal structure of Claim 19, wherein the metal runner and the metal contact comprise copper.

21. (Previously Presented) The metal structure of Claim 19, wherein the metal runner and the metal contact comprise aluminum.

22. (Previously Presented) The metal structure of Claim 16, further comprising a seed layer interposed between the metal nitride layer and the metal runner and the metal contact.

23. (Original) The metal structure of Claim 22, wherein the seed layer comprises tungsten.

24. (Original) The metal structure of Claim 22, wherein the seed layer comprises copper.

25. (Original) The metal structure of Claim 16, wherein the metal contact has a depth to width ratio of greater than about 2:1.

26. (Original) The metal structure of Claim 25, wherein the depth to width ratio is greater than about 8:1.

27. (Previously Presented) The metal structure of Claim 1, wherein the conductive lining layer is formed by atomic layer deposition.

28. (Previously Presented) The metal structure of Claim 27, wherein the atomic layer deposition comprises:

exposing surfaces of the trench and contact via to a first reactant species to form no more than about one monolayer of material;

reacting the monolayer with a reducing species; and

reacting a second reactant species with the monolayer after reacting the monolayer with the reducing species.

29. (Previously Presented) The metal structure of Claim 27, wherein the first reactant species comprises a halide.

30. (New) The structure of Claim 30, wherein the insulating layer comprises silicon oxide.

31. (New) The structure of Claim 31, wherein the contact via is formed in silicon oxide.